

National Aeronautics and
Space Administration
Headquarters
Washington, DC 20546-0001



Reply to Attn of: S

24 November 1999

Professor Joshua Lederberg
President Emeritus
Rockefeller University
1230 York Avenue
New York, NY 10021

Dear Professor Lederberg:

I am following up on a conversation you had some time ago with Don DeVincenzi, concerning the development of the protocol for assessing the potential biological hazard that might be contained in samples returned from Mars, one facet of a mission now planned to occur within the next decade. This package includes some introductory materials for participants in this activity, including an overview of the process to be used. As a member of the Science Oversight and Review Committee, (the name we are using for the group Don invited you to join) I would appreciate your comment on the materials.

NASA's long range plans for space exploration incorporate measures that address "planetary protection" concerns (i.e., the avoidance of terrestrial contamination of planets and the protection of Earth from potential hazards in returned materials). NASA's Planetary Protection Office is convening this series of workshops to assess the requirements for sample hazard testing and to develop the criteria for subsequent release of sample materials after they are returned. The process of defining the necessary protocols will require input from a wide range of disciplines, and the overall expertise and experience of the Oversight and Review Committee will contribute significantly towards this goal.

For upcoming Mars sample-return missions, NASA is following recommendations developed by the National Research Council that: 1) "samples returned from Mars by spacecraft should be contained and treated as potentially hazardous until proven otherwise," and 2) "rigorous physical, chemical, and biological analyses [should] confirm that there is no indication of the presence of any exogenous biological entity."

In addition to assessing the returned materials for biological hazards, the implementation of the protocols will be designed to shield the major portion of the samples from possible terrestrial contaminants. Deliberations during the upcoming workshops will touch on a variety of questions such as: What types/categories of tests (biohazard, life detection) should be performed upon the samples? What

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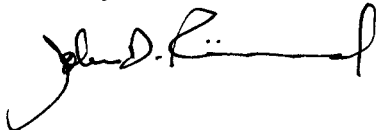
criteria must be satisfied to demonstrate that the samples do not present a biohazard? What will constitute a representative sample to be tested? What is the minimum allocation of sample material is required for analyses exclusive to the protocol, and what physical/chemical analyses are required to complement biochemical or biological screening of sample material? Which analyses must be done within containment, and which can be accomplished using sterilized material outside of containment? What facility capabilities are required to complete the protocol? What is the minimum amount of time required to complete a hazard-determination protocol? By what process should the protocol be modified to accommodate new technologies that may be brought to practice by 2006, the year that a sample receiving facility would be operational (two years before the anticipated return of the first martian samples)?

The enclosed background information includes an overview of the planned workshop process, a planning framework for the entire series of workshops, a detailed outline for the first workshop, and a list of the participants we are planning to invite. Your review and suggestions for changes in any of these can result in modifications of our planning, but suggestions received by 15 January 2000 will be most helpful in helping us to prepare for the first and subsequent workshops. In addition, we would welcome your personal participation in any of the workshops if you would like to attend.

After you've had some time to read and consider this information, I will call to discuss this material with you and answer any questions you may have, or you may contact me at any time.

I greatly appreciate your consideration of these materials, and thank you for your assistance in facing the scientific and technological challenges involved in the safe exploration of Mars.

Sincerely,

A handwritten signature in black ink, appearing to read "John D. Rummel". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

John D. Rummel, Ph.D.
Office of Space Science

Enclosures:

Overview of Mars Sample Hazard Analysis
Planning Framework
Workshop #1 Outline
Workshop #1 Tentative Invitees
Organizing Committee